

Having thus described the preferred embodiment, the invention is now claimed to be:

1. A method for determining a shape of a medical device to be implanted into a subject, comprising:
 - producing an image including a defective portion and a non-defective portion of hard tissue of interest included in the subject;
 - 5 segmenting the hard tissue of interest within the image;
 - superimposing a template, representing a normative shape of an external surface of the hard tissue of interest, to span the defective portion; and
 - determining an external shape of an implant, as function of respective shapes of the defective portion and the template, for repairing the
 - 10 defective portion.
2. The method for determining a shape of a medical device as set forth in claim 1, wherein the producing step includes:
 - producing a volumetric image of the hard tissue.
3. The method for determining a shape of a medical device as set forth in claim 2, wherein the step of producing the volumetric image includes:
 - producing a CT image of the hard tissue.
4. The method for determining a shape of a medical device as set forth in claim 1, further including:
 - determining a position for seating the implant into the defective
 - portion.
5. The method for determining a shape of a medical device as set forth in claim 1, wherein the step of superimposing includes:
 - warping the template around a deformed bone.

11. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the image is a volumetric image of the hard tissue.

12. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 11, wherein the volumetric image is a CT image.

13. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, further including:

means for determining a position for seating the implant into the defective portion.

14. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the template is warped around a deformed bone.

15. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the template is warped to an external surface of the non-defective portion of the hard tissue of interest.

16. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the normative shape of the template is determined from additional hard tissue representative of the hard tissue of interest.

17. The system for determining a shape of a medical device to be implanted into a subject as set forth in claim 10, wherein the normative shape of the template is determined as a function of an average shape of the hard tissue of interest.

18. A method for repairing a defect in a hard tissue of interest included in a subject, the method comprising:

producing a volumetric image showing a defective portion, which includes the defect, and a non-defective portion of the hard tissue of interest within
5 in the subject;

segmenting the hard tissue of interest from the image;

warping a template, having an average shape of the hard tissue of interest, over the defective and non-defective portions;

determining a shape of the implant, as function of respective shapes
10 of the defective portion and the template; and

inserting the implant into the defective portion for repairing the defect.

19. The method for repairing a defect as set forth in claim 18, further including:

updating the average shape as a function of a shape of the non-defective portion.

20. The method for repairing a defect as set forth in claim 18, further including:

determining the normative shape from another section of hard tissue representing a substantially mirror image of the hard tissue of interest.